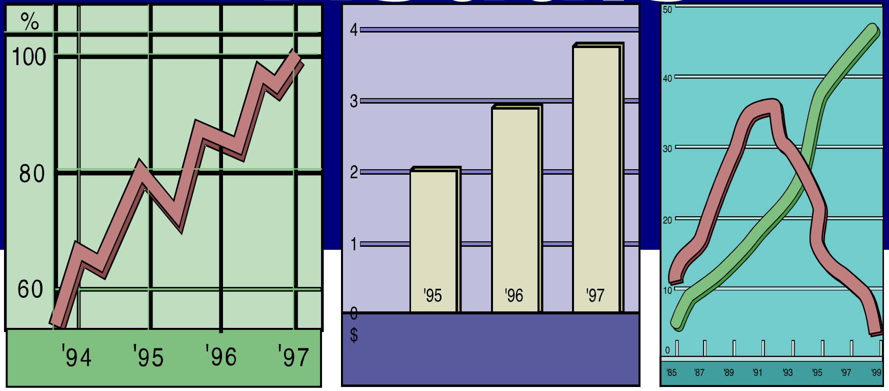
Designing Visuals



Jully Tan

Learning Outcome

1. describe the functions of graphics
2. integrate graphics and text effectively
3. explain the process for creating graphics
4. cite graphics used in technical documents
5. choose an appropriate graphic based on a document’s audience and purpose

Why use Visual Aids?

Clarity

nterest & Retention

Variety

Delivery Skills

Credibility

Use Of Visual Aids

A. Purposes of Visual Aids in Reports
   1. Add to communication by summarizing complex figures.
   2. Identify company through the use of logo.
   3. Show relationships with charts.
   4. Indicate trends with graphs.
   5. Present details with tables.

- ➢ Enhance comprehension
- ➢ Make meaningful comparisons possible
- ➢ illustrate relationships
- ➢ Serve as a universal language
- ➢ Provide emphasis
- ➢ Focus and organize information, making it easier to remember

B. Placement of Visual Aids in a Written Report

1. Place illustrations that relate directly to subject in body of report.
2. Place in appendix if indirectly related.
3. Refer to graphic aid within written text prior to its appearance.
4. Place small illustrations after first reference to each in the text.
5. Place large illustrations on first page after reference.

C. Identification of Visual Aids Sources

1. Acknowledge sources of visual aids in same manner as sources of text material.
2. Source note consists of the word SOURCE in uppercase letters, followed by colon and the source.

General Guidelines for Graphics

- Determine the Purpose of the Graphic
- Evaluate the Accuracy and Validity of the Data
- Refer to All Graphics in the Text
- Think About Where to Put Graphics
- Position Graphics Vertically When Possible
- Avoid confusion
- Provide Titles, Notes, Keys, and Source Data

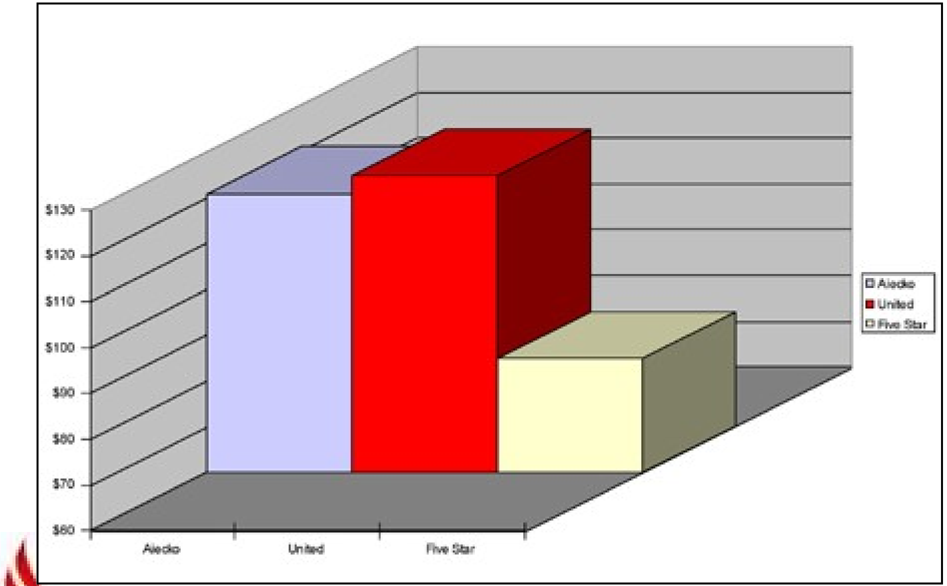
Specific Guidelines for Graphics

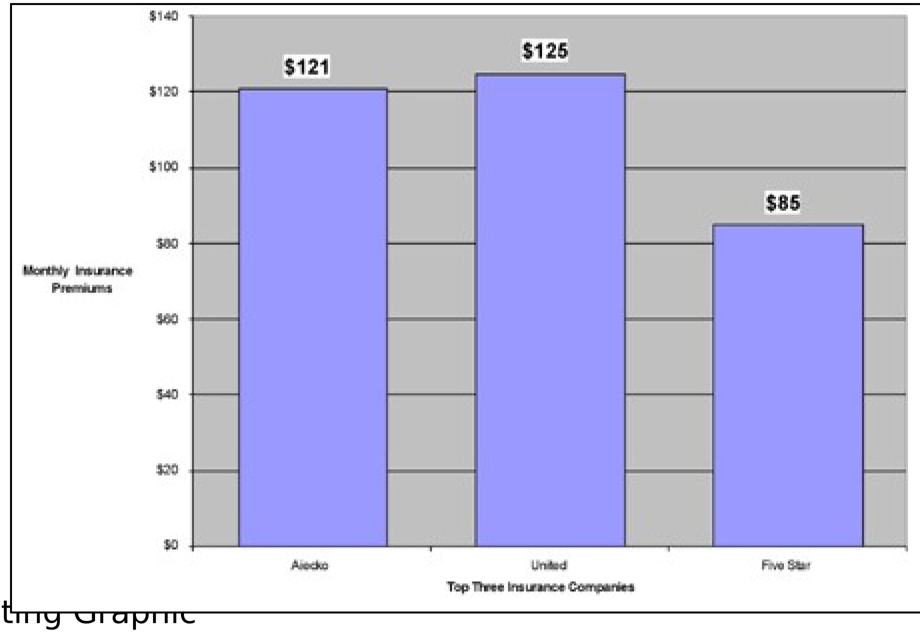
- Tables
- Pie Charts
- Bar Charts
- Line Charts
- Flowcharts
- Organization Charts
- Technical Drawings

Designing Effective Charts & Graphs

- **Make Sure Your Graphic Has a Purpose**
  - Graphics should either convey information that supports what you have already discussed in the text or present new information concisely.
  - A graphic should help your reader understand or remember information.
- **Aim for Simplicity**
  - Because your audience wants to understand your graphic quickly, you should include only those data and design elements that help convey and emphasize your primary point.
  - A graphic should be simple and uncluttered.

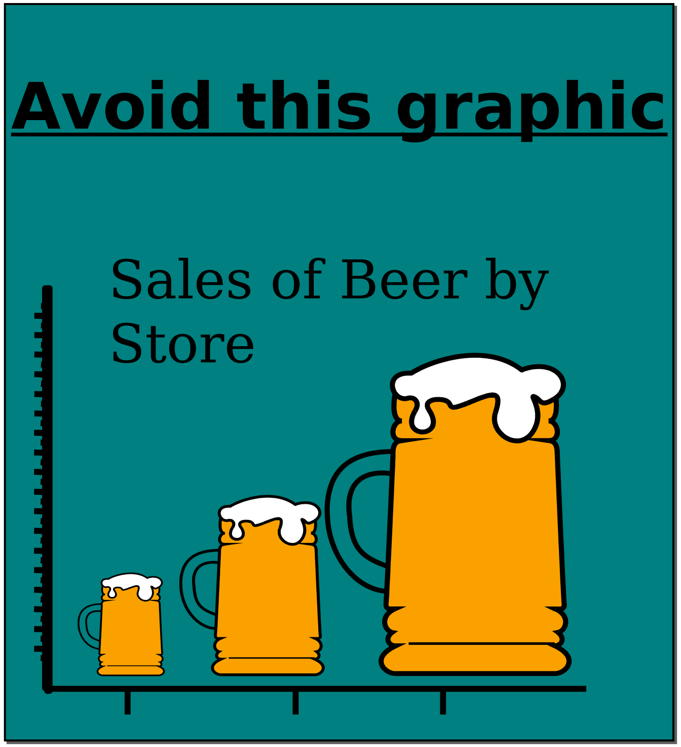
- **Be Honest**
  - Don’t mislead readers include omitting data, hiding data, not beginning axes scales at zero, manipulating elements in a photograph, and using color to misrepresent an item's importance. You are responsible for providing honest, clear, and accurate graphics.
  - remember to acknowledge your source if you did not create or

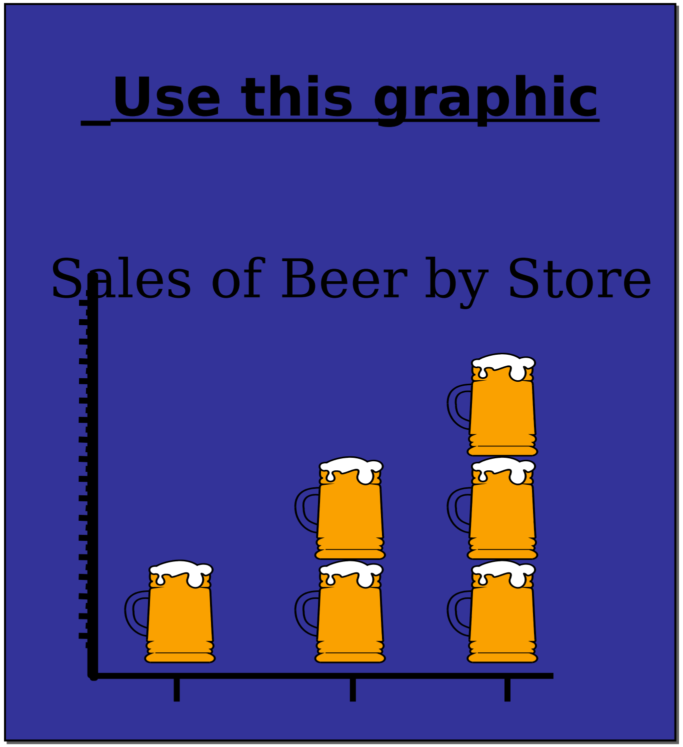




Avoid Visual Distortion

- Present the real picture
- Present the complete picture
- Concentrate on emphasis, not distortion





- **Present a Manageable Amount of Information**
  - Your readers will understand your data more easily if it is presented in small chunks rather than all at once.
  - Consider your audience and purpose when deciding how much data to include in a single graphic.

Too much data

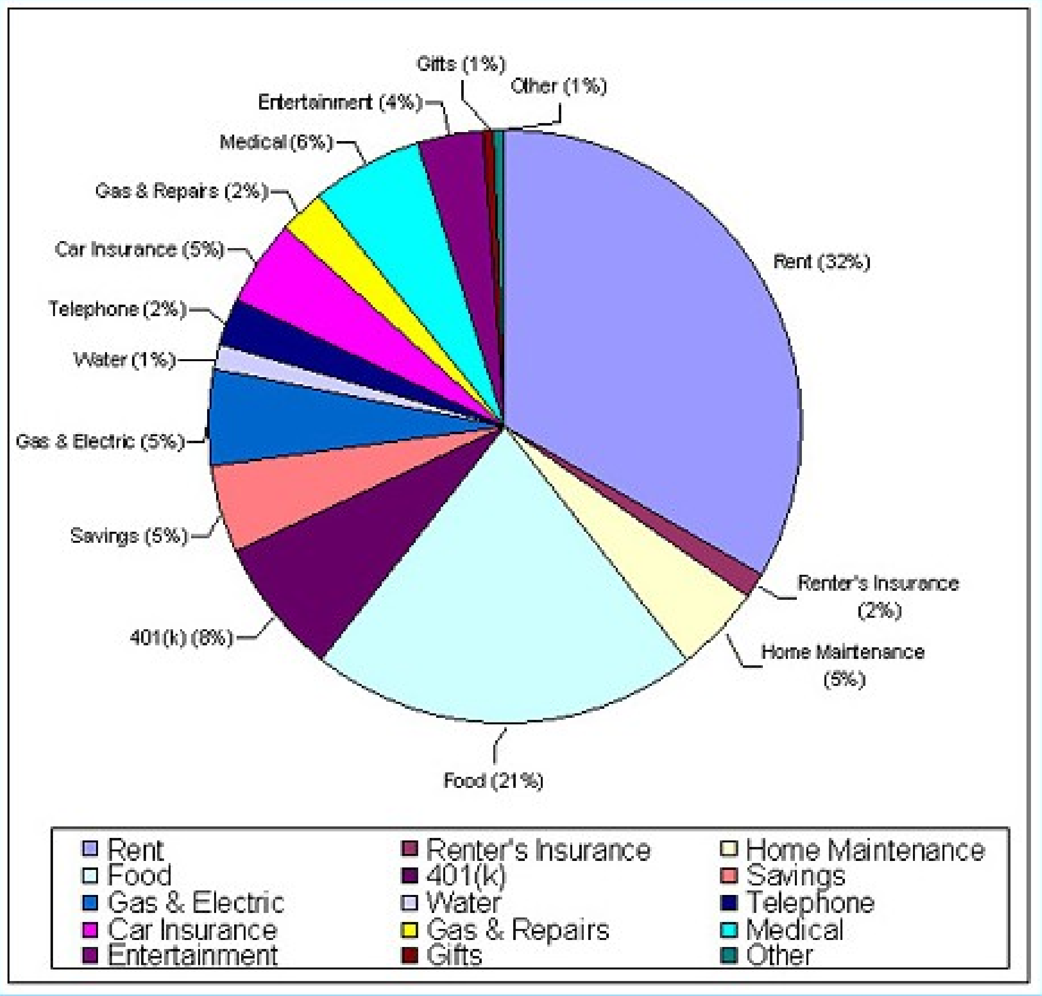


Figure 12. Typical Household Expenditures

A graphic should present a manageable amount of information. The first pie chart uses too many slices to present information on monthly expenditures **to a general audience interested in learning about household budgets. In addition, the first pie chart also includes a redundant key that lists each of the items. In contrast, the second example combines similar categories and make**

s of

househol

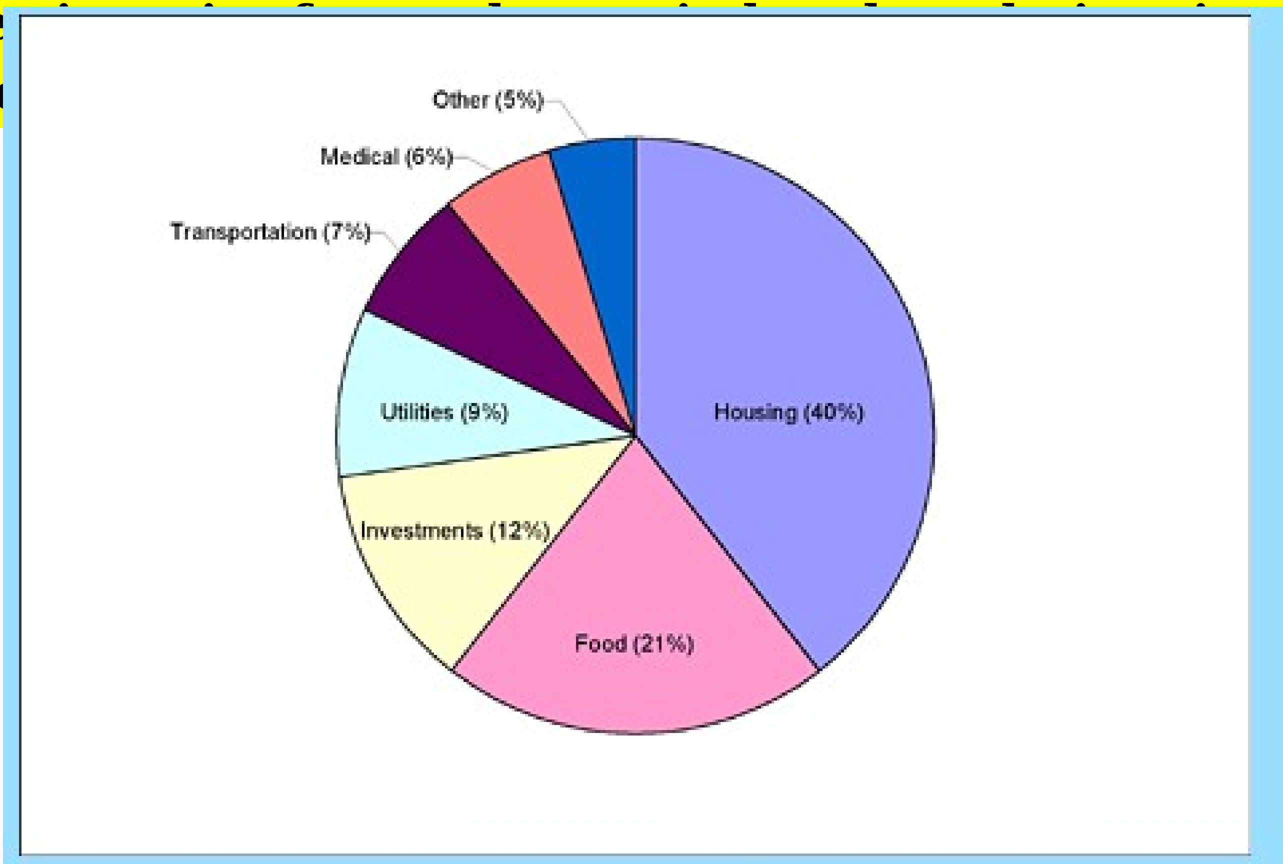
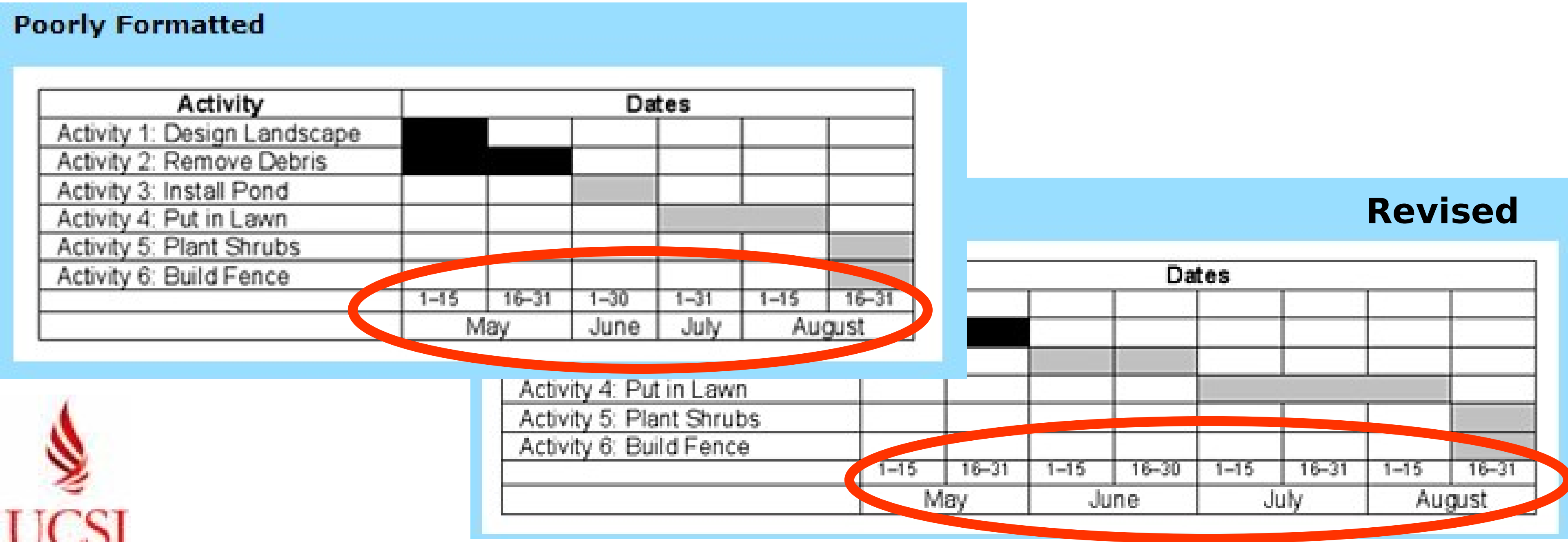


Figure 12. Typical Household Expenditures

Follow Common Conventions for Graphics

- Readers learn through experience how to understand different kinds of graphic conventions.
  - For example, percentages in a pie chart add up to 100.
  - Boxes in a flowchart represent actions or processes.
  - An organizational chart is read from the top down.
- When you meet the reader's format expectations, you increase the likelihood that the reader will understand your point.



Poorly Formatted

Activity	Dates					
Activity 1: Design Landscape	■					
Activity 2: Remove Debris	■	■				
Activity 3: Install Pond			▨			
Activity 4: Put in Lawn				▨	▨	
Activity 5: Plant Shrubs						▨
Activity 6: Build Fence						▨
	1–15	16–31	1–30	1–31	1–15	16–31
	May		June	July	August	

Revised

	Dates							
		■						
			▨	▨				
Activity 4: Put in Lawn					▨	▨	▨	
Activity 5: Plant Shrubs								▨
Activity 6: Build Fence								▨
	1–15	16–31	1–15	16–30	1–15	16–31	1–15	16–31
	May		June		July		August	

- **Label Your Graphic**
  - integrating graphics and text helps readers understand your point.
  - Successful integration begins with assigning a label, number, and title to your graphics, differentiating them from one another.
  - For instance, a table and a pie chart in a document might be identified as "**Table 1.** Means and Standard Deviations for Fillmore Air Components This Year to Date" and "**Figure 1.** Greenhouse Gas Emissions from Ventura County by Major Source, 2005." Place identifying information above tables and below figures.
  - Help readers understand a graphic quickly by labeling major elements.
    - For tables, label rows and columns so readers can interpret the data in the cells of the table.
    - For graphs, label the vertical (y) and horizontal (x) axes as well as lines.
    - For pie charts, label each slice.
    - For all graphics, include units of measurement for every variable displayed.

Specific Guidelines for Graphics

- Tables
    - Use Informal Tables as Extensions of Text
    - Use Formal Tables for Complex Data Separated from Text
    - Use Plenty of White Space
    - Follow Conventions for Dividing and Explaining Data
    - Pay Special Attention to Cost Data

Tables

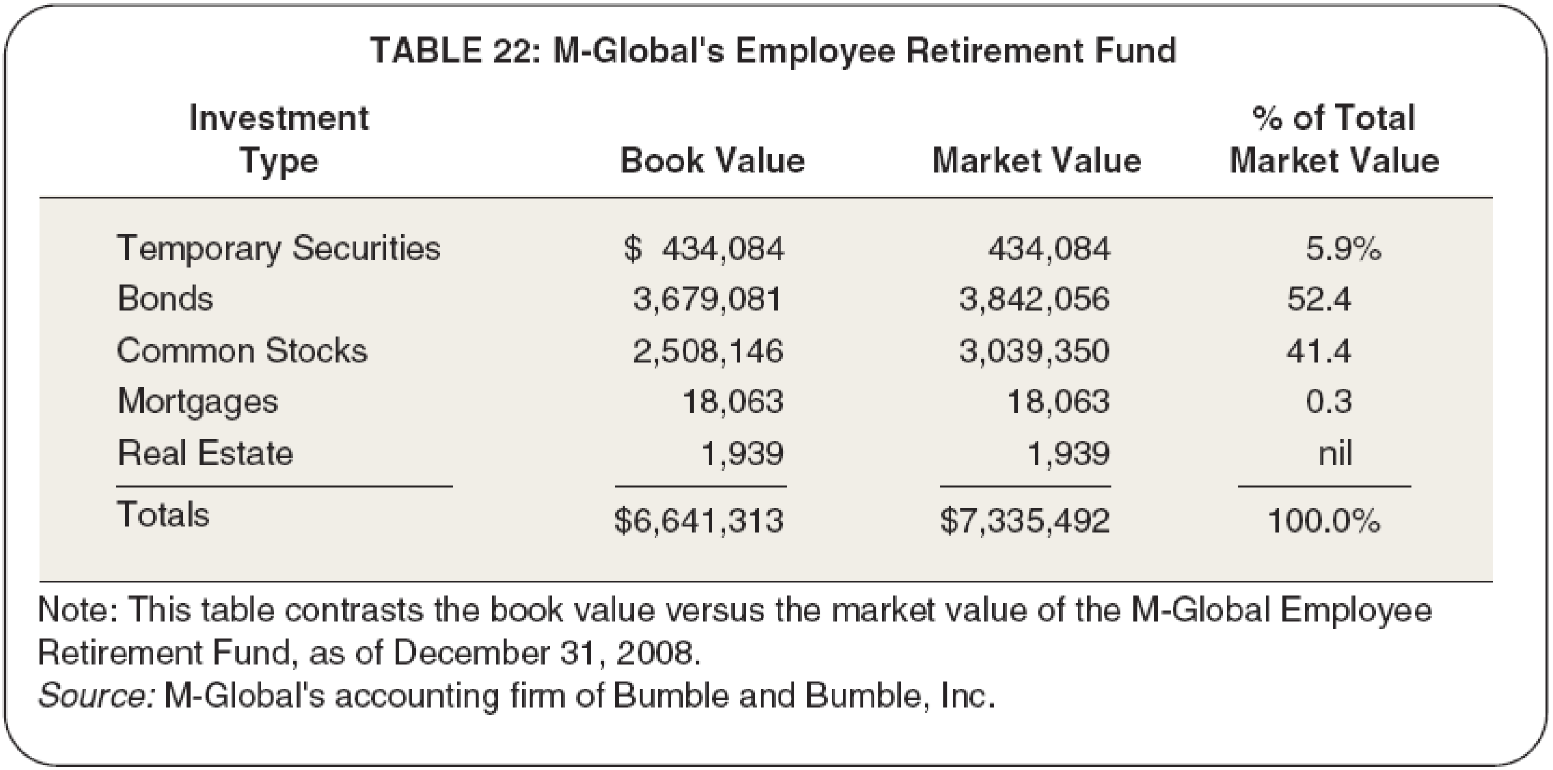


TABLE 22: M-Global's Employee Retirement Fund

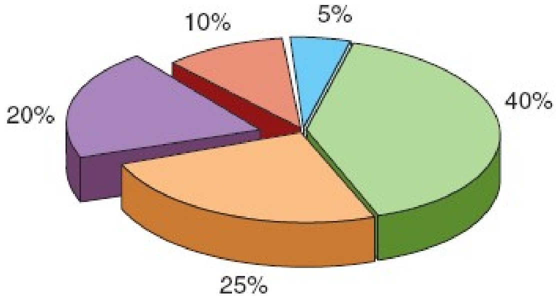
Investment Type	Book Value	Market Value	% of Total Market Value
Temporary Securities	$ 434,084	434,084	5.9%
Bonds	3,679,081	3,842,056	52.4
Common Stocks	2,508,146	3,039,350	41.4
Mortgages	18,063	18,063	0.3
Real Estate	1,939	1,939	nil
Totals	$6,641,313	$7,335,492	100.0%

Note: This table contrasts the book value versus the market value of the M-Global Employee Retirement Fund, as of December 31, 2008.
Source: M-Global's accounting firm of Bumble and Bumble, Inc.

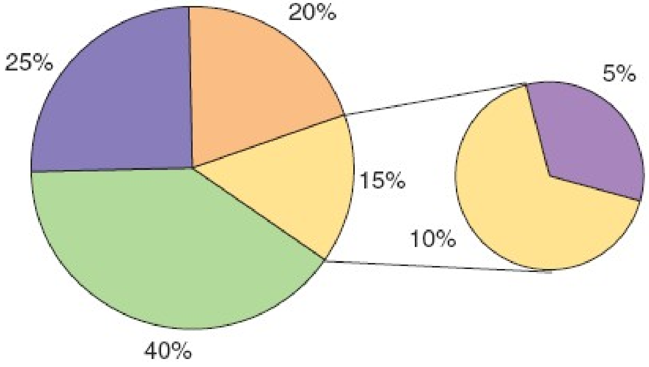
Specific Guidelines for Graphics

- Pie Charts
  - Use Pie Charts Especially for Percentages and Money
  - Use No More Than 6 or 7 Divisions
  - Move Clockwise from 12:00, from Largest to Smallest Wedge
  - Be Creative, But Stay Simple
  - Draw and Label Carefully

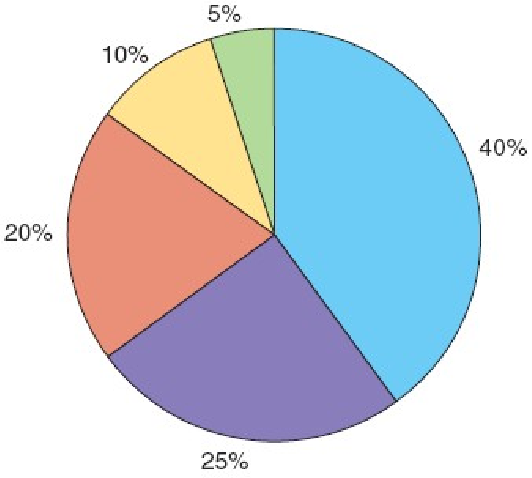
Pie Charts



Exploded pie chart



Pie within pie

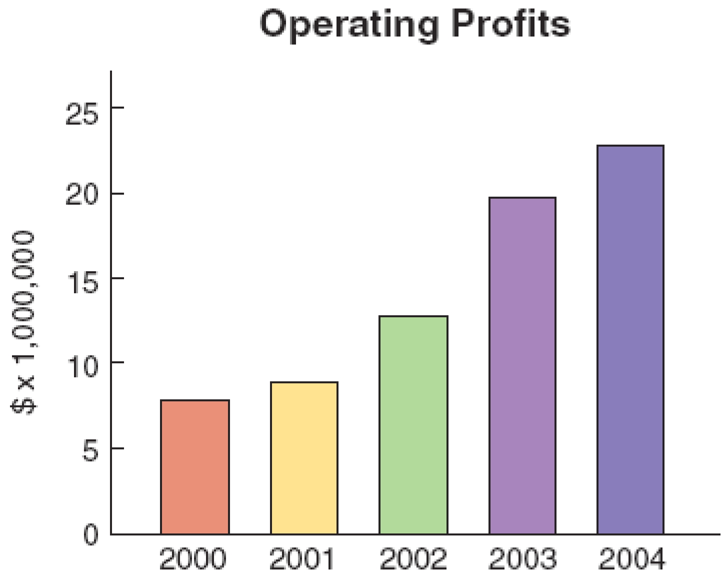


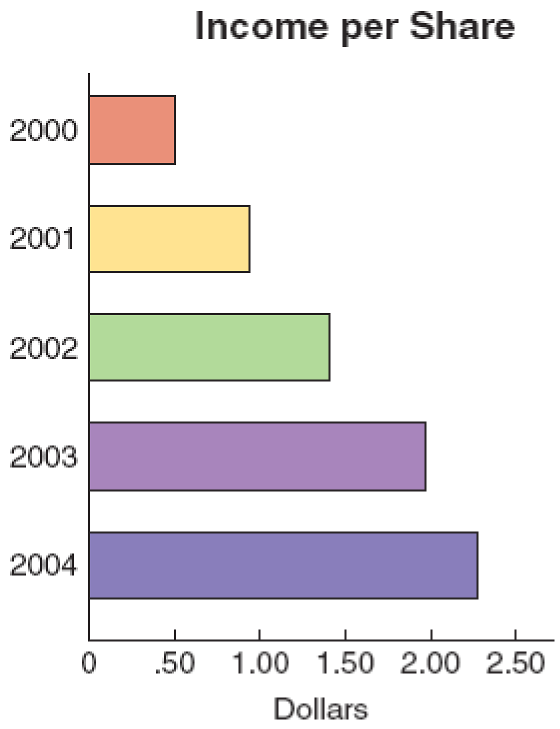
Simple pie chart

Specific Guidelines for Graphics

- Bar Charts
  - Use a Limited Number of Bars
  - Show Comparisons Clearly
  - Keep Bar Widths Equal and Adjust Space Between Bars Carefully
  - Carefully Arrange the Order of Bars
  - Be Creative

Bar Charts

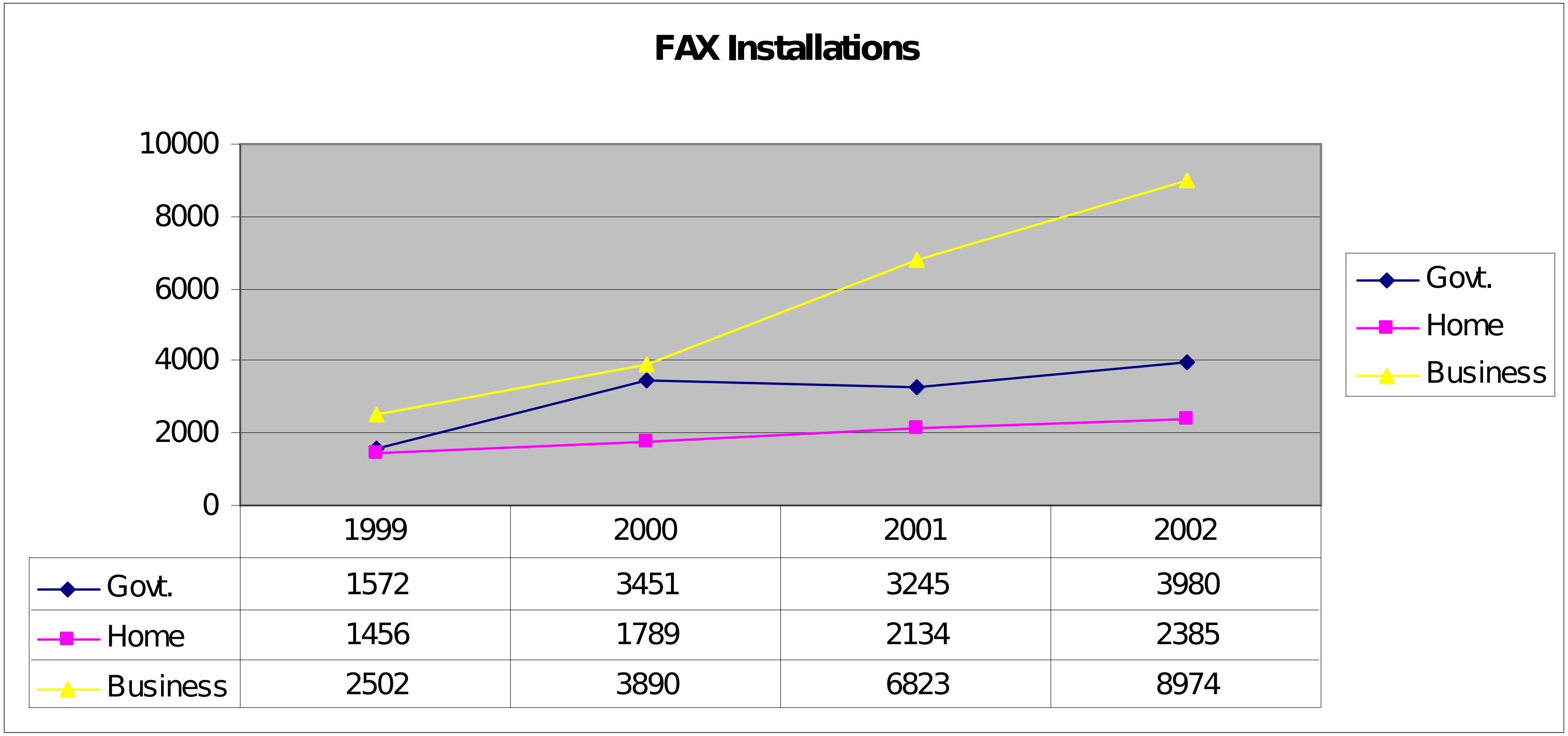

Operating Profits
$ x 1,000,000
25
20
15
10
5
0
2000
2001
2002
2003
2004


Income per Share
2000
2001
2002
2003
2004
0
.50
1.00
1.50
2.00
2.50
Dollars

Specific Guidelines for Graphics

- Line Charts
  - Use Line Charts for Trends
  - Locate Line Charts with Care
  - Strive for Accuracy and Clarity
  - Do Not Place Numbers on the Chart Itself
  - Use Multiple Lines with Care

Line charts

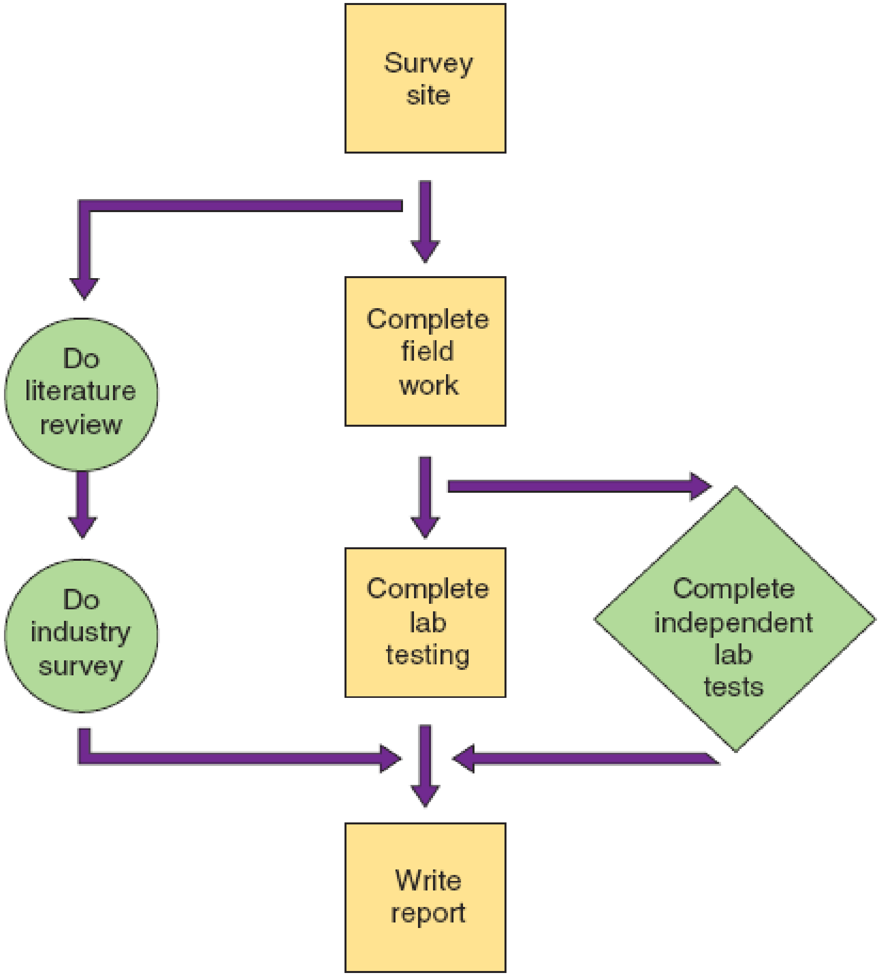


	1999	2000	2001	2002
Govt.	1572	3451	3245	3980
Home	1456	1789	2134	2385
Business	2502	3890	6823	8974

Specific Guidelines for Graphics

- Flowcharts
    - Present Only Overviews
    - Limit the Number of Shapes
    - Provide a Legend When Necessary
    - Run the Sequence from Top to Bottom or from Left to Right
    - Label All Shapes Clearly

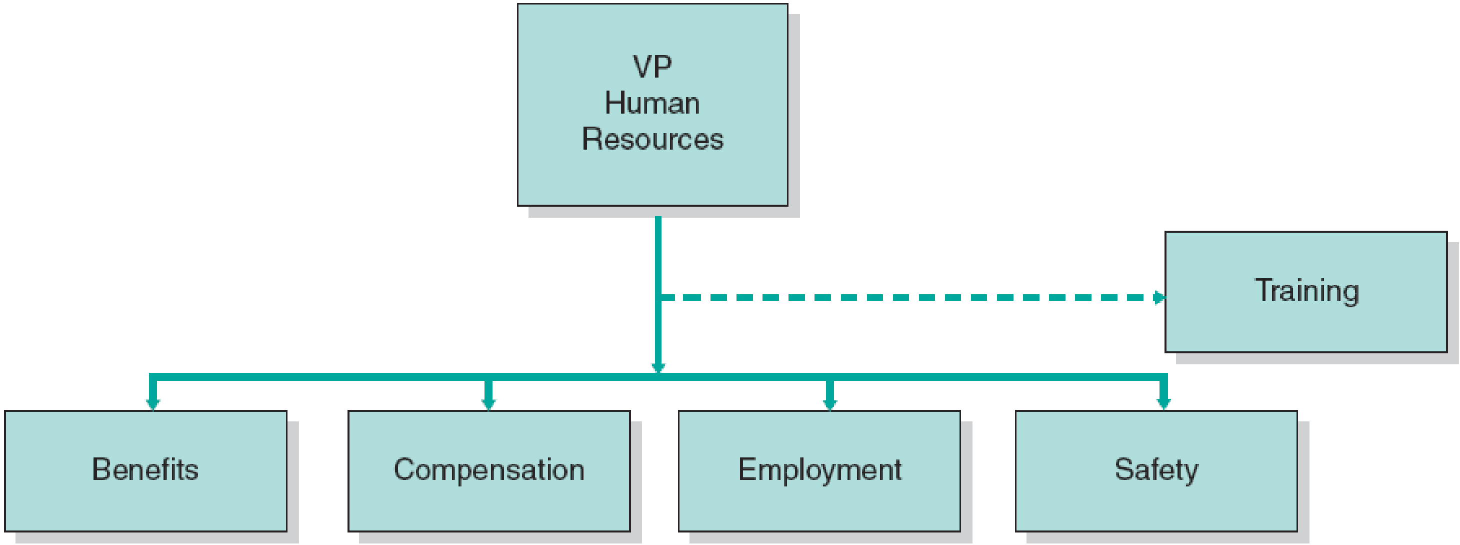
Flowcharts


Survey site
Do literature review
Complete field work
Do industry survey
Complete lab testing
Complete independent lab tests
Write report

Specific Guidelines for Graphics

- Organization Charts
  - Use the Linear “Boxes” Approach to Emphasize High-Level Positions
  - Connect Boxes with Solid or Dotted Lines
  - Use a Circular Design to Emphasize Mid- and Low-Level Positions
  - Use Varied Shapes Carefully
  - Be Creative

Organization Charts



VP
Human
Resources

Training

Benefits

Compensation

Employment

Safety

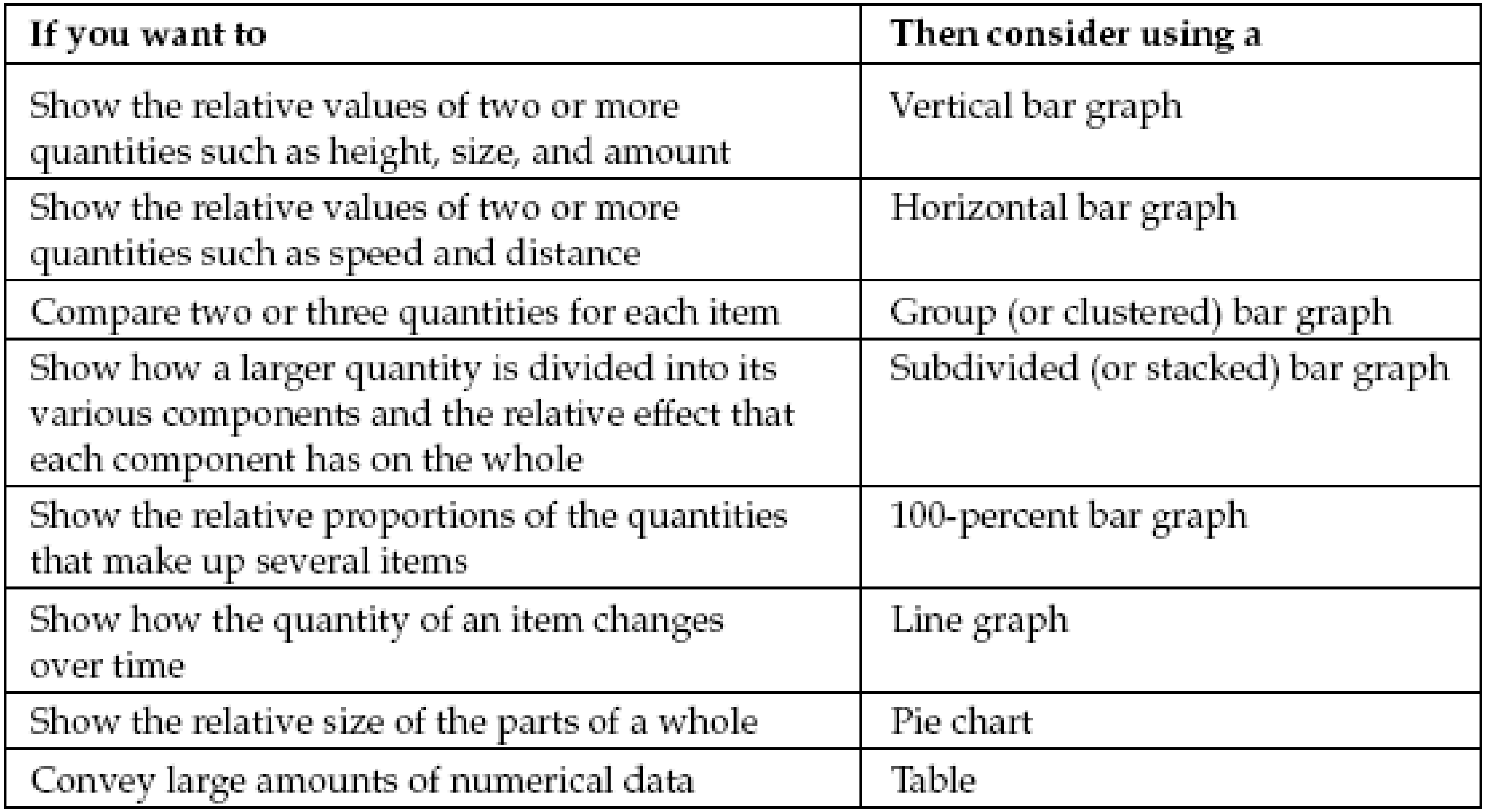
Specific Guidelines for Graphics

- Technical Drawings
    - Choose the Right Amount of Detail
    - Label Parts Well
    - Choose the Most Appropriate View
    - Use Legends When There Are Many Parts

Process of Designing Visual Aid

Step 1: Analyze Your Audience and Purpose

i. What point you are trying to make with this graphic?
ii. What types of charts and graphs do your readers understand?
Your answers will help you choose the most effective kind of graphic to convey your point



If you want to	Then consider using a
Show the relative values of two or more quantities such as height, size, and amount	Vertical bar graph
Show the relative values of two or more quantities such as speed and distance	Horizontal bar graph
Compare two or three quantities for each item	Group (or clustered) bar graph
Show how a larger quantity is divided into its various components and the relative effect that each component has on the whole	Subdivided (or stacked) bar graph
Show the relative proportions of the quantities that make up several items	100-percent bar graph
Show how the quantity of an item changes over time	Line graph
Show the relative size of the parts of a whole	Pie chart
Convey large amounts of numerical data	Table

Step 2: Enter Data into a Spreadsheet Program

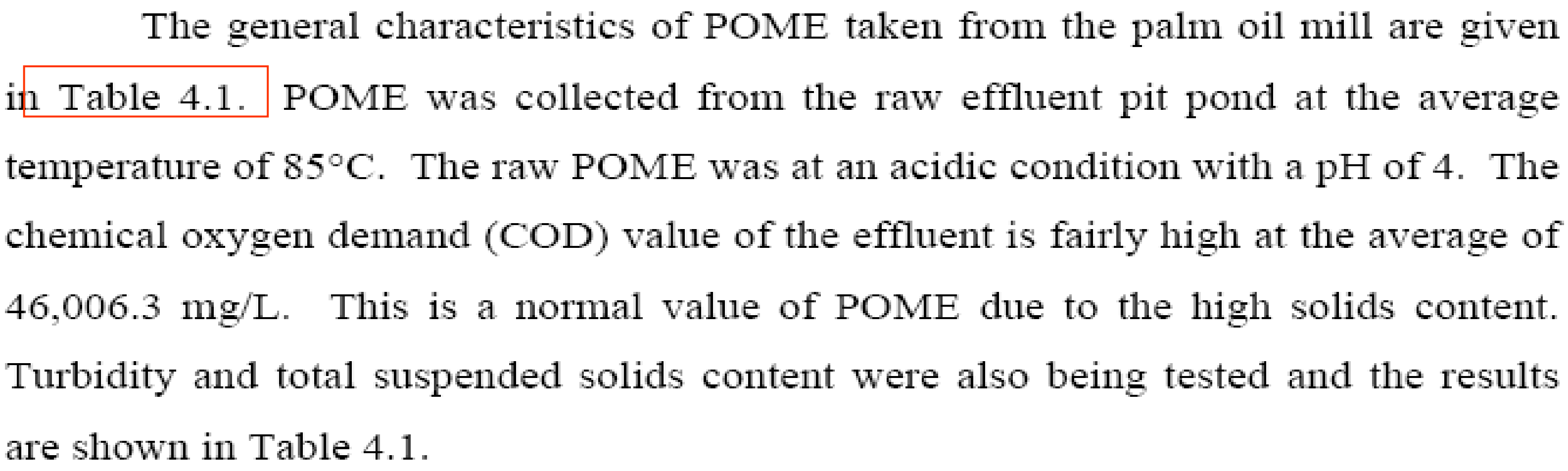
Step 3: Select Data to Include in a Graphic
then choose the graphic type that you been decide at step 1

Step 4: Customize the Graphic for Your Audience and Purpose
-proper title and labeling

Step 5: Integrate the Graphic and the Text

- **Place the graphic in a logical location in the document.**
- **Introduce the graphic in the text.**
- **Explain the graphic in the text.**
- **Make the graphic clearly visible.**
- **Make the graphic easy to find.**

Example of the text content with graphic aid



The general characteristics of POME taken from the palm oil mill are given in Table 4.1. POME was collected from the raw effluent pit pond at the average temperature of 85°C. The raw POME was at an acidic condition with a pH of 4. The chemical oxygen demand (COD) value of the effluent is fairly high at the average of 46,006.3 mg/L. This is a normal value of POME due to the high solids content. Turbidity and total suspended solids content were also being tested and the results are shown in Table 4.1.

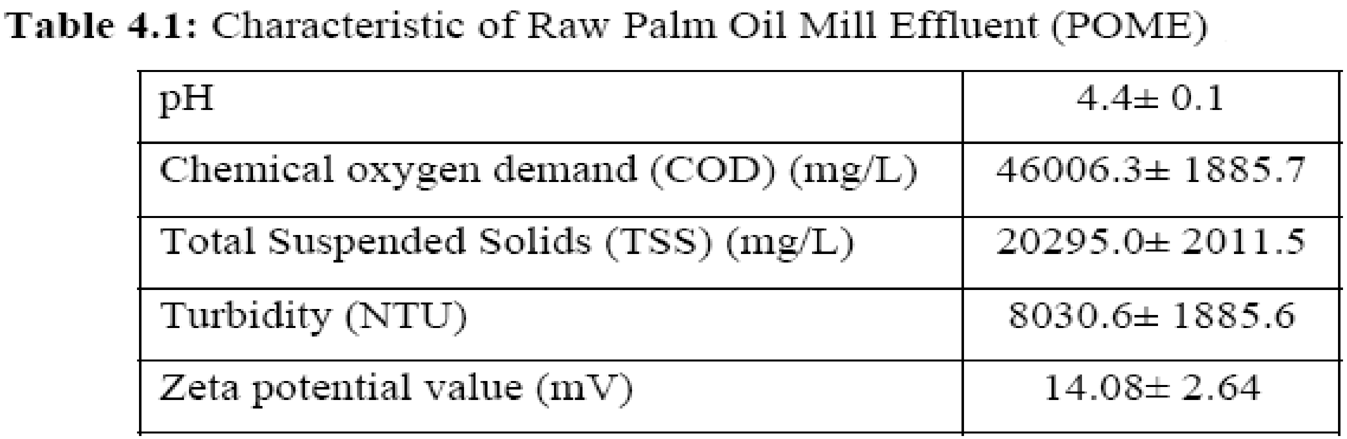


Table 4.1: Characteristic of Raw Palm Oil Mill Effluent (POME)

pH	4.4± 0.1
Chemical oxygen demand (COD) (mg/L)	46006.3± 1885.7
Total Suspended Solids (TSS) (mg/L)	20295.0± 2011.5
Turbidity (NTU)	8030.6± 1885.6
Zeta potential value (mV)	14.08± 2.64

The effect of initial phenol concentrations (25–200 mg/L) on adsorption capacity by the activated carbons, EFB 500 and EFB 800 is shown in Fig.3. Activated carbon EFB 800 had a higher adsorption capacity which varied between 2.7 and 10.8 mg/g at initial phenol concentrations of 25 to 200 mg/L. EFB 500 had an adsorption capacity between 1.4 and 6.6 mg/g for the same conditions. The increase in adsorption capacity of adsorbent may be due to the higher probability of collision between phenol and adsorbent.

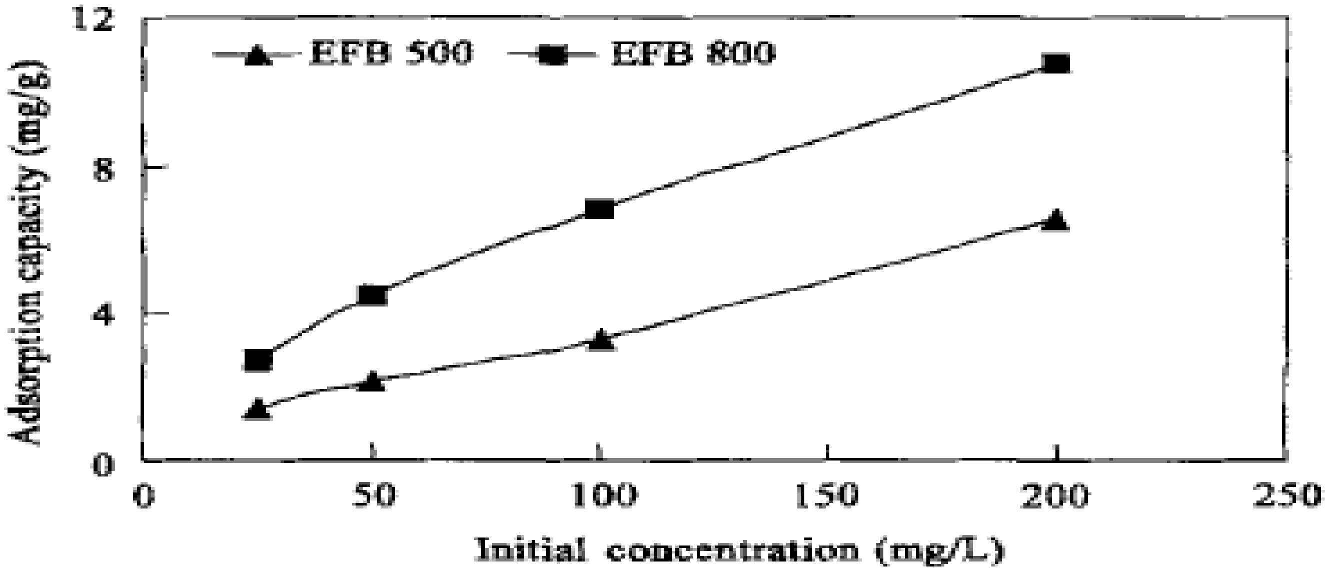
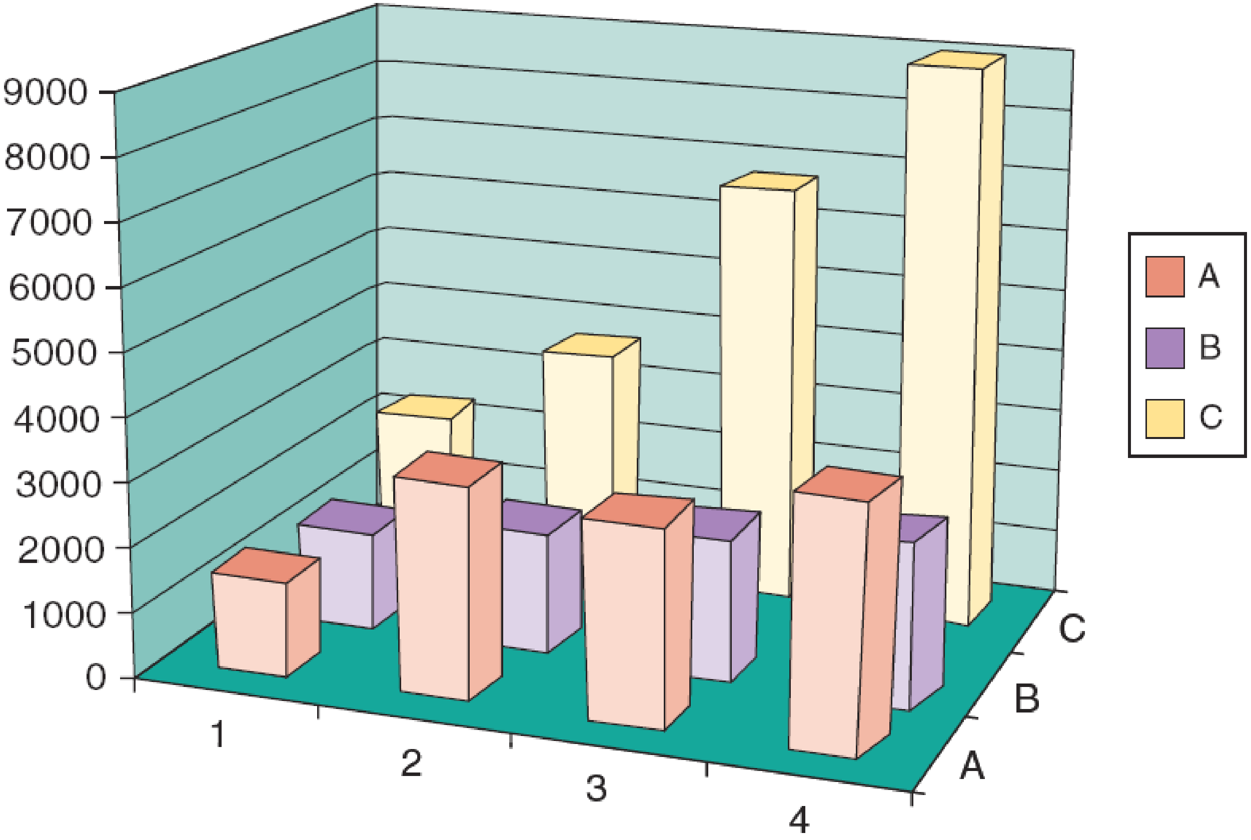


Fig. 3 Effect of initial phenol concentration on adsorption by activated carbons. *Adsorbent dosage: 1% w/v; temperature: 30°C; pH 3; agitation:* 150 r/min; contact time: 6 h.

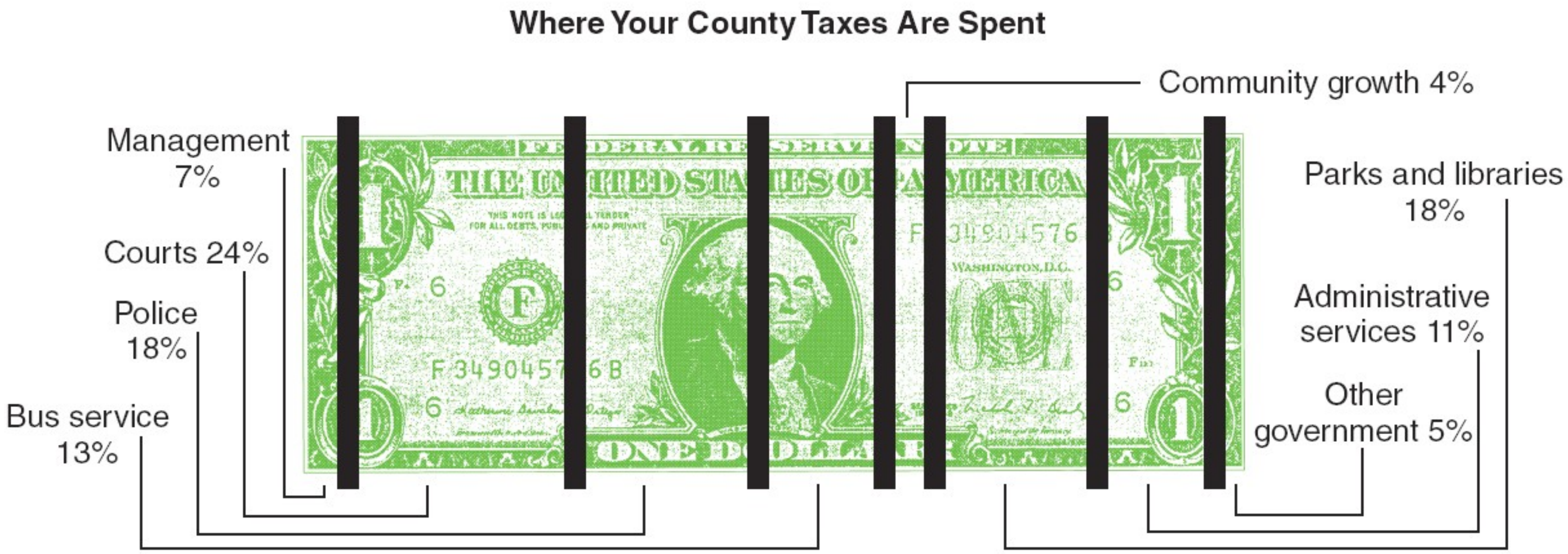
Misuse of Graphics

- Confusing Comparisons
- Chartjunk
- Distorted Elements

Misuse of Graphics



Misuse of Graphics



Misuse of Graphics